UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,984,302 B2
APPLICATION NO. : 09/223472
DATED : January 10, 2006
INVENTOR(S) : Lee

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 5, delete lines 64 thru Column 8, line 3 (claims 1-15) and substitute the attached claims.

~~Delete claims 1-15 and insert the following attached claims.~~

1. A method of applying a material onto a substrate surface, comprising:

exposing a surface of a substrate to a liquid, containing a material, in an enclosure; and directing more of the liquid from an outlet which, when viewed from the front, is off-center from a central axis of the substrate normal to the surface, and, when viewed from the right, is at an angle other than normal to the surface so that the liquid flows rotationally over the surface about the central axis, the material depositing on the surface, wherein introducing the liquid further includes spraying the liquids out of a plurality of spray outlets at least two of the outlets contributing to said rotational flow about the axis over the surface and the plurality of spray outlets includes at least four spray outlets forming a cross pattern.

2. The method of claim 1, further comprising:

pressing the substrate against the enclosure to form a seal.

3. The method of claim 1, further comprising:

coupling a cathode contact to the substrate surface,

wherein the material plates onto the surface.

4. The method of claim 3, further comprising:

forming a metallic film on the substrate surface.

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5. The method of claim 4, wherein the metallic film includes copper.

6. The method of claim 1, wherein the spray outlets are angled at approximately 20 to 60 degrees from the surface.

7. The method of claim 1, wherein the liquid is directed radially outward with respect to the center of the substrate surface.

8. The method of claim 1, wherein the liquid has a circumferential component and a radial component relative to the axis.

9. The method of claim 1, wherein at least one of the plurality of spray outlets is pointed in a perpendicular direction toward the center of the substrate surface.

10. The method of claim 1, wherein the plurality of spray outlets further includes at least one spray outlet located at the center of the cross pattern.

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11. A method of electroplating a material onto a substrate surface within an enclosed chamber, comprising: securing a substrate within an opening in a chamber so that a surface of the substrate faces an interior of the chamber;

coupling a cathode to the substrate; and

introducing an electrochemical liquid into the chamber through an outlet which, when viewed from the front, is off-center from a central axis of the substrate normal to the surface, and, when viewed from the right, is at an angle other than normal to the surface so that the liquid flows rotationally over the surface about the central axis, material plating out of the liquid onto the surface, wherein introducing a liquid further includes spraying the liquid out of a plurality of spray outlets at least two of the outlets contributing to said rotational flow about the axis over the surface, at least one of the plurality of spray outlets is pointed in a perpendicular direction toward the center of the substrate surface, and said plurality of spray outlets includes at least four spray outlets forming a cross pattern.

12. The method of claim 11, wherein said plurality of spray outlets further includes at least one spray outlet located at the center of the cross pattern.

13. The method of claim 11, wherein the spray outlets are angled at approximately 20 to 60 degrees relative to the surface.

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14. The method of claim 13, wherein said liquid is directed radially outward with respect to the axis.

15. The method of claim 14, wherein said liquid has a circumferential component and a radial component relative to the axis.

This certificate supersedes certificate of correction issued March 4, 2008.

Signed and Sealed this

Fourth Day of March, 2008

JON W. DUDAS

Director of the United States Patent and Trademark Office